

IMPLANT ALIGNMENT

The present invention relates to the alignment of dental implants and to a method for their alignment. In the *Probe*,
5 September 1998, I have described a dental implant and a method for its insertion. In this arrangement a site is selected so that it is in the middle of a ridge. The jaw bone is drilled using internally irrigated titanium alloy burs so that it is sited between the labial and palatal cortical plates, making
10 sure that the adjacent teeth and anatomical structures are avoided. The implant is inserted until level with the bone.

Abutment or template selection is effected by using a trial
15 abutment (template) which measures the restorative angle, allows the implant to be positioned to the correct depth, and aligns the driving flat (or hex) in the correct plane.

The trial abutment (template) should fit within the hollow
20 prosthetic envelope. This ensures that the final abutment will be in the right position. Any adjustments to the position of the implant can now be made before it is integrated. The cover screw is then replaced, the wound is sutured and the implant is allowed to integrate over a period
25 of about six months.

The depth to which the implants are placed is important since if they are too deep this may result in bone loss (to the 1st thread) which is not ideal, and if they are not deep enough
30 they may become exposed prematurely. That a trial abutment or template is necessary is shown by the fact that otherwise there is no way that the angle of the abutment can be selected and the plane of orientation measured or changed unless this

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is done at the 1st stage of surgery.

In order to achieve this, previously each template was provided with a downwardly depending lug provided with a plurality of driving planes for co-operation with similarly shaped receptor planes in the corresponding bore in which it was adapted to fit. Said "internal hex" arrangements can be satisfactory but give rise to a number of problems. In the first place the internal driving planes have to be small and therefore their manufacture is relatively difficult. However because they can be subjected to significant rotational forces during positioning the manufacturing tolerances must be of a low order. Most of all the utilisation of the internal driving flats, as previously suggested raises the difficulty that the dentist cannot be sure that the template is fully "home" on the implant, which can give rise to misalignments once full implant integration has occurred.

The need therefore exists for a template which will drive the implant during rotation only if the template and the implant are fully engaged. Further there is a need to ensure that the turning moment applied by the template to the implant is as positive as possible.

According to the present invention there is provided an apparatus for the alignment of a dental implant, said apparatus comprising an implant comprising a generally axial blind bore and a plurality of angled templates each adapted for operative inter-engagement with the bore of the implant; characterised in that each template comprises a locator lug for inter-engagement with the axial bore of the implant, said lug comprising a circular cross-section. It is preferred that the lug shall have a frusto-conical section for inter-

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engagement with a corresponding bore in the implant (or taper-lock). In a further embodiment the frustro-conical section includes a plurality, preferably four, of driving planes for co-operation with the bore of the implant. It is also
5 preferred that the frustro-conical section terminates towards its free end in a portion of a smaller diameter.

Alternatively the locator lug may be of a right cylindrical configuration and a plurality of driving planes are provided
10 internally of the body of the template for operative interconnection with a corresponding set of driving flats positioned about the mouth of the bore of the implant.

In an alternative arrangement the locator lug is separate
15 from the template and the template is formed with a bore that is adapted to be co-axial in use with that of the implant.

In a preferred embodiment the template terminates at its intended upper end remote from the lug in a shaft or peg which
20 has a generally elongate configuration, often of a right cylindrical shape, so that whatever its rotational position it will mimic the correct angle of the existing teeth in use.

25 By means of the present invention the implant will only rotate to its final position when fully inter-engaged. Partial inter-engagement, and hence misalignment of the template with the implant, is thus much less likely to occur.

30 The invention will now be described, by way of illustration only, with reference to the accompanying drawings wherein:-
Figure 1 shows a side view from below of a first template of the invention;

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Figure 2 shows a side view from below of a final abutment for use with the invention;

Figure 3 shows a side view of the first template in cross-section;

5 Figure 4 shows a side view from below of another template of the invention;

Figure 5 shows a side view a template somewhat as shown in Figure 1 but with a plurality of driving planes disposed in frusto-conical portion.

10 Figure 6 shows an exploded side view of a template with a frusto-conical lug in part vertical section;

Figure 7 shows a side view in part section of a template with locking flats to form a external "hex" on the implant;

Figure 8 shows an exploded side view in part section of a
15 template and implant in accordance with Figure 2,

Figure 9 shows a side view part section of the arrangement of Figure 4, and

Turning first to Figures 1 to 4, Figure 1 shows a template
20 comprising a main body which is generally angled to the axis of an implant.

A template alignment shaft 3 and body 4 are angled to the axis of the implant in use by an amount varying from 5° and 45°
25 degrees. The template and the implant are arranged such that they are correctly positionable prior to integration relative to a bore positioned in the jaw by means of the correct orientation of the shaft 3 relative to the existing teeth in use.

30

As is shown in Figure 1, the body of the template 1 terminates in generally downwardly depending frusto-conical portion 5 and a right cylindrical extension piece 6. It is arranged

- 5 -

that frusto-conical portion 5 and the extension piece 6 are generally co-axial with the bore of the implant 2. As will be appreciated the locking force between the implant and the template is only established when they are fully inter-
5 engaged. A similar arrangement to that shown in Figure 1 is shown in cross-section in Figure 3.

A similar arrangement is shown in Figure 2. In this arrangement the body 4 is provided along its length with an
10 upper most aperture 7, said aperture extending downwardly to terminate at a lower most aperture 8. A bolt (shown generally in Figures 6, 7 and 8) passes through the body to locate the template on the implant as necessary. It is desirable that such a bolt should be provided with an Allen keyway for
15 tightening purposes.

Figure 4 provides an alignment shaft 3 similar to that shown in Figure 1 and a body 4, again similar to that shown in Figure 1 with the exception that in this arrangement a
20 rotation aperture 12 is provided through the body 4 in order to locate a rotation rod therein. The arrangement of Figure 4 also provides a downwardly depending locator lug 11 which has a circular cross-section which is in the form of a right cylinder for location in a corresponding bore in the implant.

25

Figure 5 shows an arrangement similar to Figure 1 but wherein the frusto-conical portion 5 includes a plurality of driving planes 20, but wherein the radially outer edge (21) of the planes 20 has a frusto-conical aspect so that it forms a
30 continuous surface with the frusto-conical portion 5. This allows the template 1 to inter-engage with a co-operating axial bore while also having a positive inter-engagement therewith.

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An exploded diagram of the implant and template assembly according to the present invention, somewhat as shown in Figure 2, is shown in Figure 6. In this arrangement, shown in partial cross-section, a threaded bolt 18 is provided with an Allen key aperture 19 and is adapted for location in an upper bolt aperture 7. The shaft of the bolt 18 passes through the frusto-conical portion of the template 5 and through the lower bolt aperture 8.

10 With the implant and the template fully inter-engaged, the threaded end of the bolt 18 enters a recess 16 in the implant 2. Implant 2 is provided to its exterior with a ribbed edged body 14 terminating towards its upper edge in an annular implant head 13. At its other (lower) end is a cut out 15 for reasons of bone integration.

In use the bolt 18 secured in the aperture 7 passes into the recess 16 and into the screw thread cavity 17, whereupon rotation of the Allen key in aperture 19 causes the template 1 to lock onto the implant 2 in a temporary fashion. The Allen key can then be used to rotate the template 1 into its correct orientation relative to other teeth. The bolt 18 then may be withdrawn without disturbing the implant 2 and the template 1 may be removed and recorded.

25

A similar arrangement is shown in Figure 7 but in this instance bolt 18 is provided with standard external driving flats 18', while the template 1 is provided with internal driving flats 10 only.

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In Figure 8 there is provided an exploded arrangement showing in part section an embodiment of Figure 3. Its *modus operandi* has been fully described with regard to Figure 6. The only

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difference lies in that instead of the frusto-conical portion 5, there is provided a plurality of internal locking flats 10 for inter-engagement with an external "hex" 20 secured about the mouth of the recess 16 in the implant 2. It will be appreciated that the effect of the external hex 20 is to locate the body 4 of the template 1 but only when the bolt 18 is fully inter-engaged by means of the Allen key engaged in the aperture 19. Again by means of the Allen key (not shown) template 1 can be placed in its correct position by thereby rotating the implant 2 and subsequently removing the same.

A similar arrangement is shown in Figure 9 which shows the arrangement of Figure 4 in side view and in partial cross-section. The locator lug 11 is right cylindrical and acts to locate the template 1 in position in the implant 2 but of course only once fully inter-engaged. It may then be rotated once the flats 10 have been inter-engaged with the external hex 20 as shown in Figure 8.

Claims

1. An apparatus for the alignment of dental implants, said
5 apparatus comprising an implant provided with a generally
axial bore and a plurality of angled templates each adapted
for operative inter-connection with the bore of the implant,
characterised in that each template comprises a locator lug
adapted for inter-engagement with the axial bore of the
10 implant, said lug comprising a circular cross-section.
2. An apparatus according to claim 1 when the locator lug is
integral with the template or is separate therefrom.
- 15 3. An apparatus according to either claims 1 or 2 wherein the
locator lug is separate from the template and the template is
provided with a bore which is adapted to be generally co-
axial with the bore of the implant in use.
- 20 4. An apparatus according to claims 1 or 2 wherein the
locator lug is a frusto-cone having its portion of smaller
diameter towards the free end of the lug.
5. An apparatus according to claim 4 wherein the lug
25 comprises an extension piece extending generally axially of
the axis of the frusto-cone.
6. An apparatus according to claim 3 further comprising a
plurality of driving flats disposed about the mouth of the
30 template bore and adapted for inter-connection with
corresponding elements on the implant.
7. An apparatus according to any of claims 4 to 6 wherein the

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frusto-cone is additionally provided with a plurality of driving flats.

8. An apparatus according to any preceding claim wherein the
5 template comprises a shaft remote from the locator lug, said shaft has been adapted to mimic the angle of existing teeth when rotated.

9. An apparatus substantially as hereinbefore set forth with
10 reference to, and/or as illustrated in, any one of the accompanying drawings.

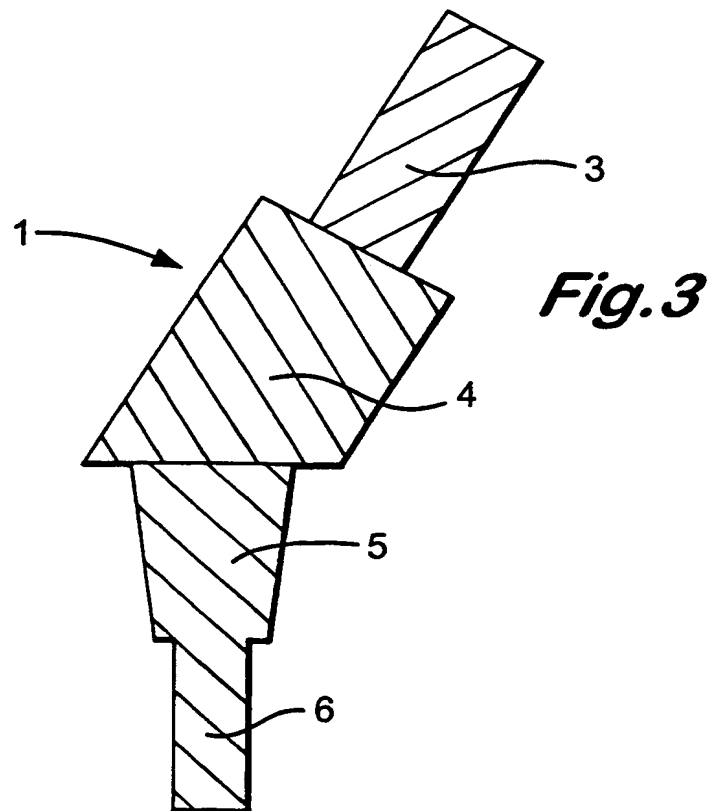
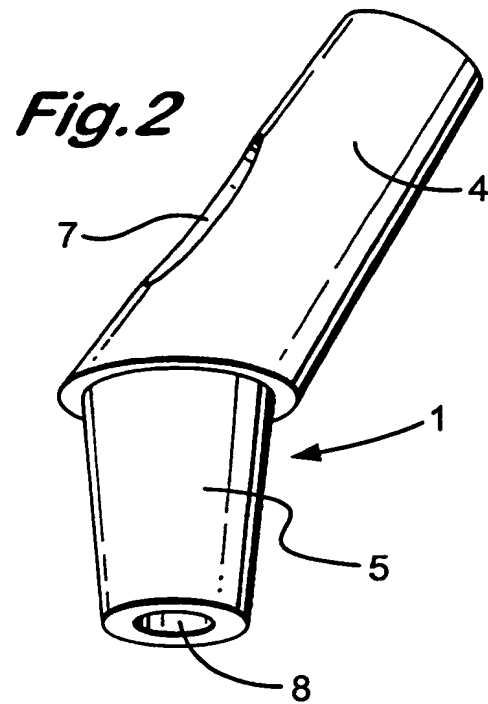
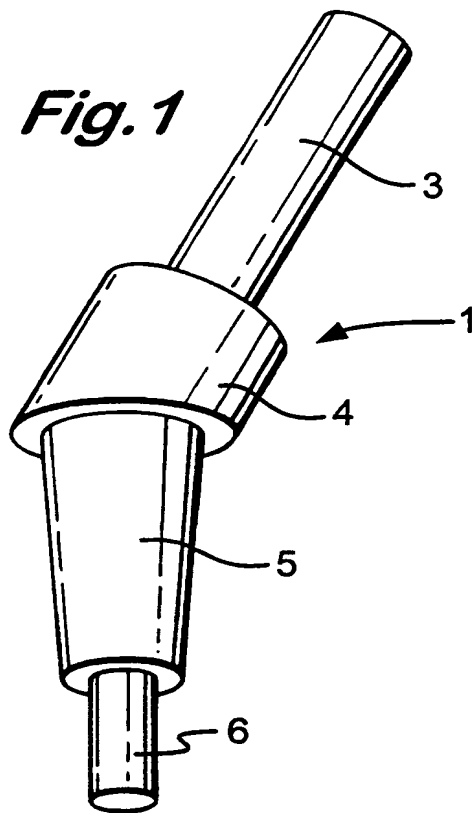


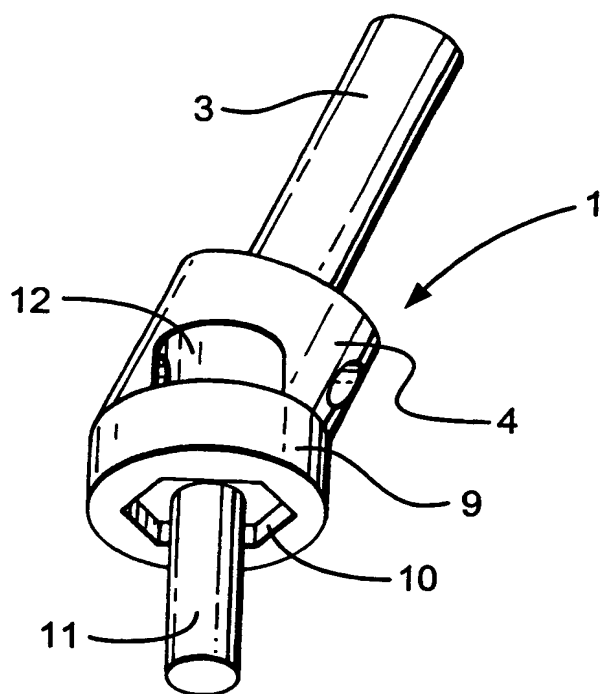
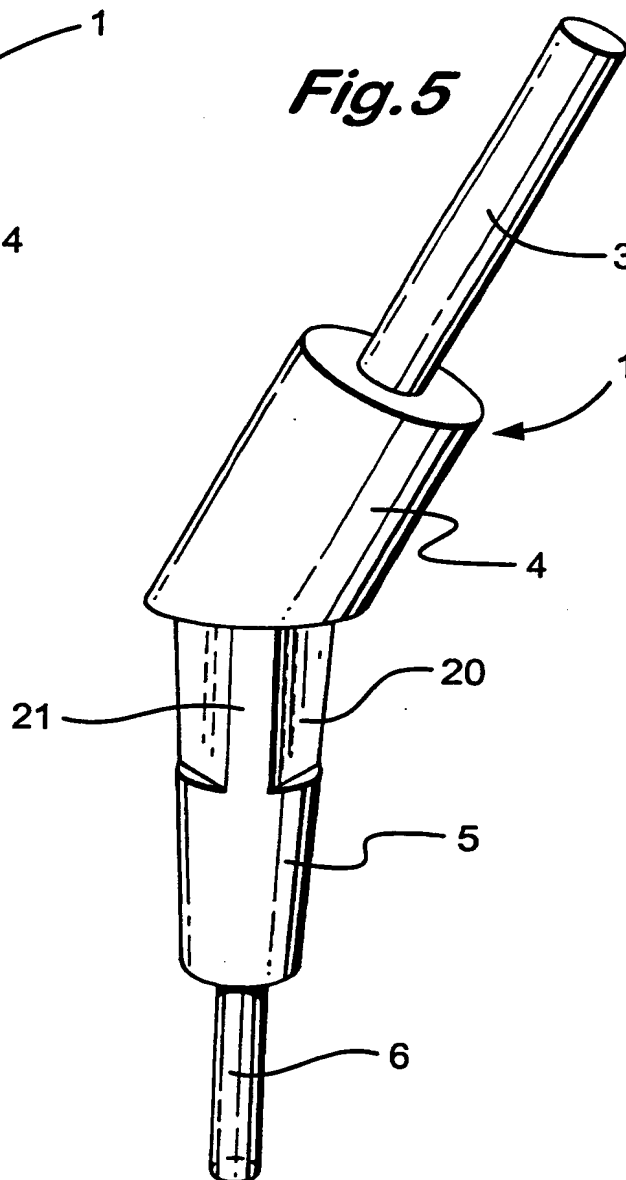
Fig.4**Fig.5**

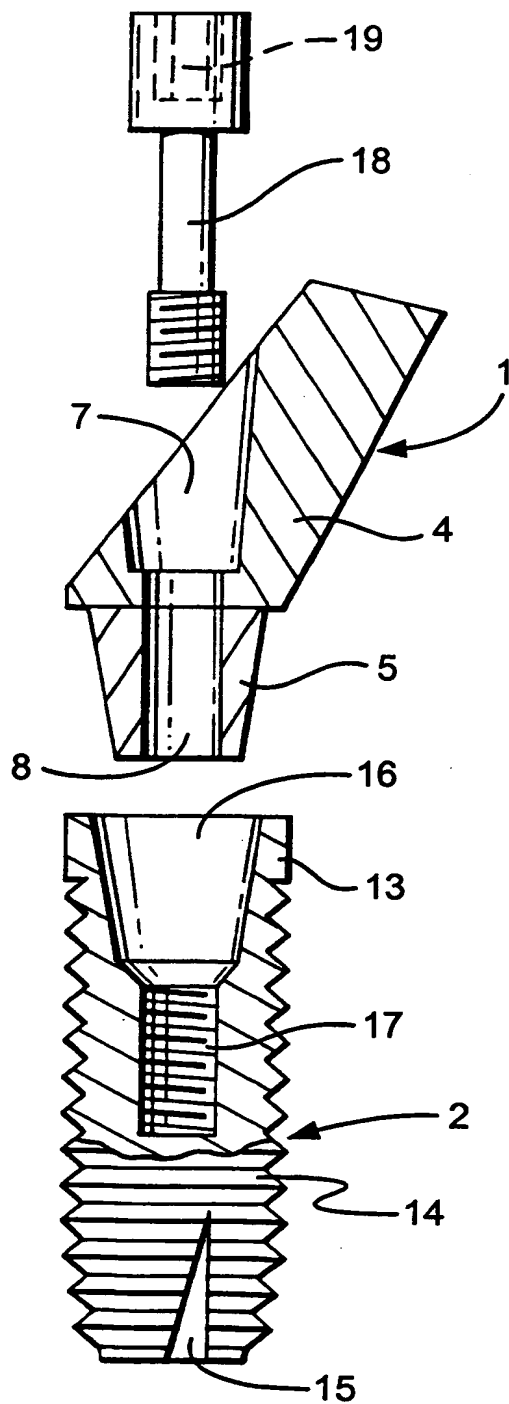
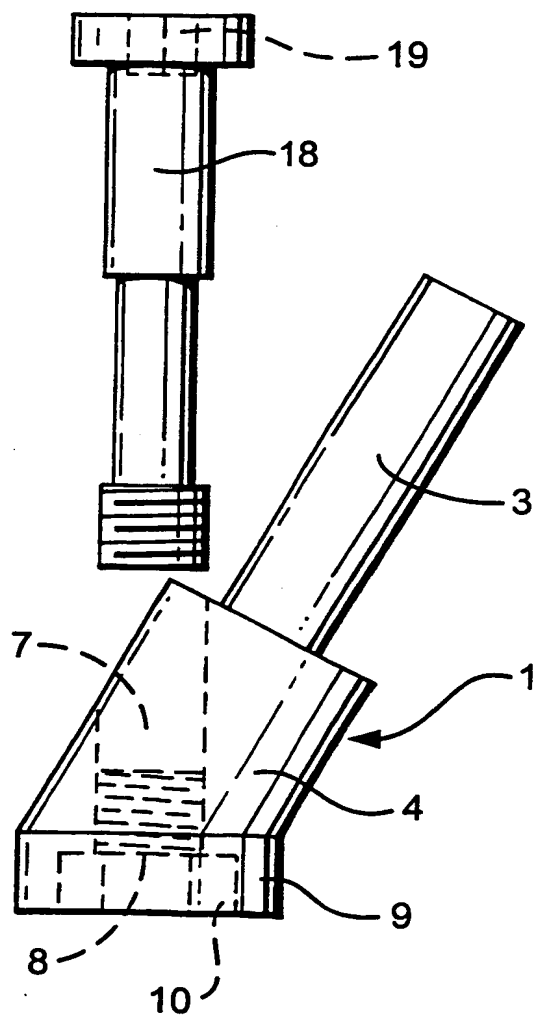
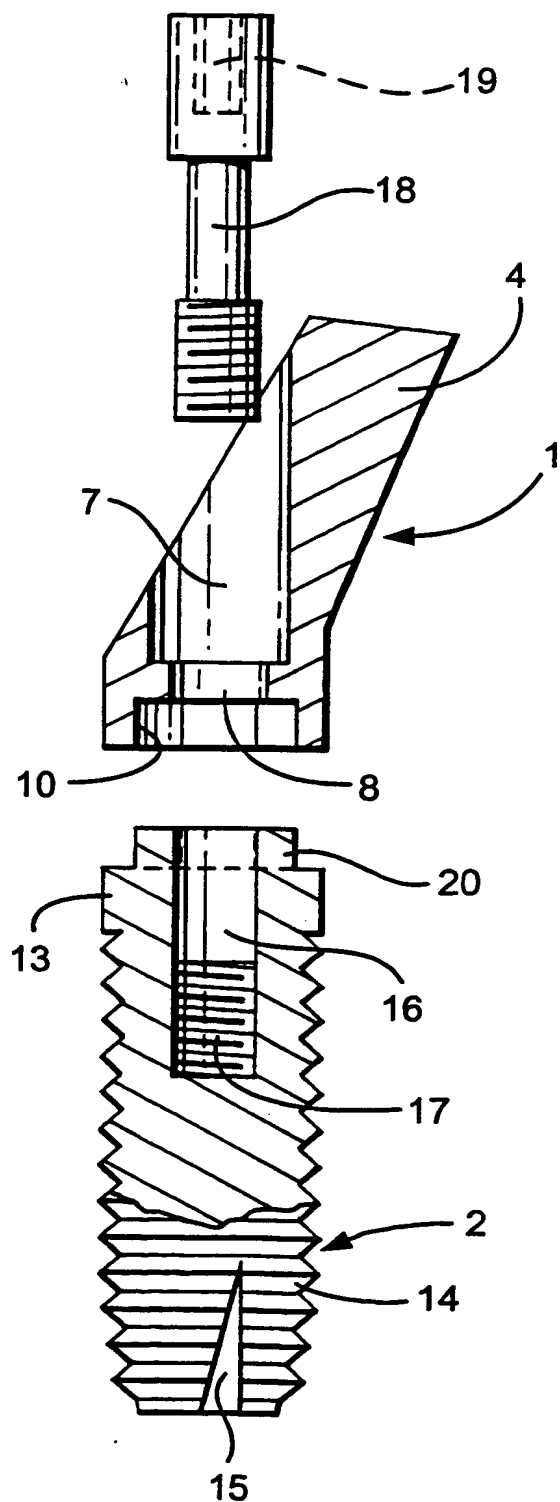
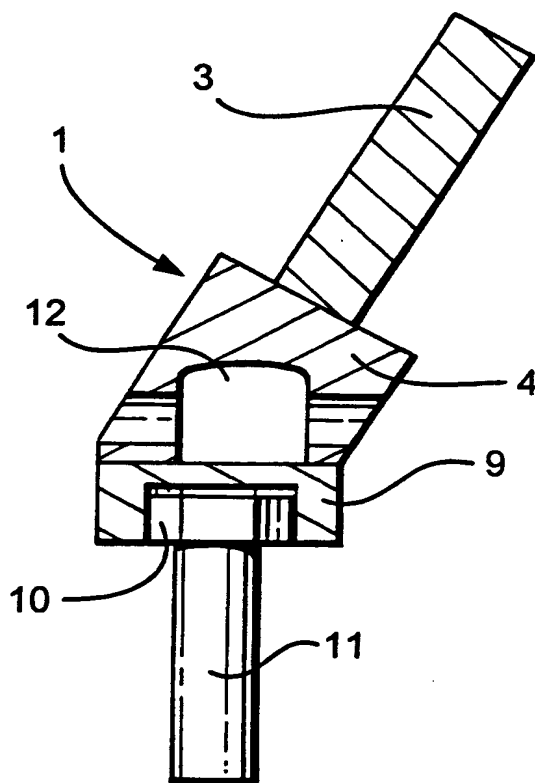
Fig. 6*Fig. 7*

Fig. 8**Fig. 9**

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/04087

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61C8/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 02, 28 February 1997 (1997-02-28) -& JP 08 252269 A (G C:KK), 1 October 1996 (1996-10-01)	1, 2, 8
Y	abstract; figures 2-7	4, 5
Y	US 5 947 733 A (GRANDE VINCENZO ET AL) 7 September 1999 (1999-09-07) column 1, line 5-34 column 2, line 6-11; figures 1A-1D	4, 5
A	US 5 927 979 A (STRONG J TODD ET AL) 27 July 1999 (1999-07-27) column 1, line 55-67 column 2, line 18-31; figure 1	1-3

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

2 February 2001

Date of mailing of the international search report

09/02/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Roche, O

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 9

The subject matter of claim 9 is defined by reference to the description and drawings which is not allowed by the PCT (see Rule 6.2 PCT). The claim does not define any clear structural features or limitations. Consequently, the scope of the claim is not clear (see Article 6 PCT) and meaningful search is not possible (see Article 17 PCT).

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/04087

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 08252269 A	01-10-1996	NONE	
US 5947733 A	07-09-1999	AT 174198 T AU 7123896 A BR 9610906 A CA 2232822 A WO 9714371 A DE 59600962 D EP 0801544 A JP 11506688 T	15-12-1998 07-05-1997 13-07-1999 24-04-1997 24-04-1997 21-01-1999 22-10-1997 15-06-1999
US 5927979 A	27-07-1999	US 5628630 A AU 3805597 A BR 9710496 A EP 0918493 A US 6045361 A WO 9803130 A US 6083004 A AU 4600896 A BR 9510051 A CA 2207950 A EP 0798993 A JP 10510737 T WO 9618356 A US 5823777 A US 6068480 A	13-05-1997 10-02-1998 11-01-2000 02-06-1999 04-04-2000 29-01-1998 04-07-2000 03-07-1996 03-11-1998 20-06-1996 08-10-1997 20-10-1998 20-06-1996 20-10-1998 30-05-2000

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P109	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 04087	International filing date (day/month/year) 23/10/2000	(Earliest) Priority Date (day/month/year) 21/10/1999
Applicant SETHI, Ashok et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

6

☐ None of the figures.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 9

The subject matter of claim 9 is defined by reference to the description and drawings which is not allowed by the PCT (see Rule 6.2 PCT). The claim does not define any clear structural features or limitations. Consequently, the scope of the claim is not clear (see Article 6 PCT) and meaningful search is not possible (see Article 17 PCT).

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 05 October 2001 (05.10.01)	
International application No. PCT/GB00/04087	Applicant's or agent's file reference P109
International filing date (day/month/year) 23 October 2000 (23.10.00)	Priority date (day/month/year) 21 October 1999 (21.10.99)
Applicant SETHI, Ashok et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

18 May 2001 (18.05.01)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Juan CRUZ

Telephone No.: (41-22) 338.83.38

REC'D 21 JAN 2002

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P109	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/04087	International filing date (day/month/year) 23/10/2000	Priority date (day/month/year) 21/10/1999
International Patent Classification (IPC) or national classification and IPC A61C8/00		
Applicant SETHI, Ashok et al.		



- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 18/05/2001	Date of completion of this report 17.01.2002
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Ardhuin, H Telephone No. +49 89 2399 7511 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/04087

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-7 as originally filed

Claims, No.:

1-7 as received on 21/11/2001 with letter of 19/11/2001

Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/04087

☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

see separate sheet

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	4, 5
	No:	Claims	1, 2, 3, 6, 7
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-7
Industrial applicability (IA)	Yes:	Claims	1-7
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

Re Item I

Basis of the report

The amendments filed with the letter dated 19.11.2001 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendments concerned are the following: while the originally filed application does not disclose any value of angle between the axial bore of the implant and the angled template, the amended claims 1 and 7 define a range of values for these angles.

This report has therefore been established as if this range of values was not defined in claims 1 and 7.

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty and inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: PATENT ABSTRACTS OF JAPAN vol. 1997, no. 02, 28 February 1997 (1997-02-28) - & JP 08 252269 A (G C:KK), 1 October 1996 (1996-10-01)
- D2: US-A-5 927 979 (STRONG J TODD ET AL) 27 July 1999 (1999-07-27)

V.1. Independent claims 1 and 7

V.1.1. The document D1 discloses (see abstract) an apparatus for the alignment of dental implants comprising:

- an implant provided with a generally axial bore : D1, implant with reference sign 1 on figures 9 and 10;
- a plurality of angled templates each adapted for operative inter-connection with the bore of the implant: the different angled templates have reference number 7 on figures 5-8 of D1;
- wherein each template comprises a locator lug adapted for inter-engagement

with the axial bore of the implant, said lug comprising a circular cross-section: lug with reference number b on figures 5-8 of D1;

- an "abutment to which the prosthesis is formed": abutment with reference number 2 in D1 (see figure 10).

Therefore, independent claim 1 does not meet the requirements of Article 33 (2) PCT.

V.1.2. The method of selecting an abutment for a dental prosthesis as defined in claim 7 is also known from D1 (see abstract and figures 6-10).

Therefore, independent claim 7 does not meet the requirements of Article 33 (2) PCT.

V.2. Dependent claims 2 and 3

In the device known from D1, the element considered as the lug may comprise the frusto-cone (7d) and the piece (b) extending from this cone (see figures 6 and 7 in D1). Therefore, claims 2 and 3 do not meet the requirements of Article 33 (2) PCT.

V.3. Dependent claim 4

Claim 4 define both the shape of the axial bore of the implant and the shape of the lug that should fit in this axial bore. This claim does not meet the requirements of Article 33 (3) PCT for the following reasons:

Implants with an axial bore showing driving flats are known in the art (see for example D2, the driving flats 15 on figure 5 and col. 9, lines 53-61). It would be obvious for the person skilled in the art wishing to used such implant for its known anti-rotational advantage (see D2, col. 9, lines 53-61) to provide the apparatus as claimed in claim 1 with the appropriate lug shape.

V.4. Dependent claim 5

Claim 5 does not meet the requirements of Article 33 (3) PCT for the reasons given above under points V.4 and V.5.

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V.5. Dependent claim 6

The features defined in claim 6 are already disclosed in document D1 in combination with the features defined in claim 1. Therefore, claim 8 does not meet the requirements of Article 33 (2) PCT.

Re Item VII

Certain defects in the international application

The application do not meet the requirements of Rule 6.3(b), Rule 5.1(a)(ii) and Rule 6.2(b) PCT.